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EUROPEAN PATENT APPLICATION

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Applicant: **Nippon Wiperblade Co., Ltd.**
998, Oaza Kamiochiai
Yono-shi Saitama-ken 338(JP)

Inventor: **Arai, Masaru** c/o Nippon Wiperblade
Co.Ltd.
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken 338(JP)
Inventor: **Saita, Itsuro** c/o Nippon Wiperblade
Co.Ltd.
998 Oaza Kamiochiai
Yono-Shi Saitama-Ken 338(JP)

Representative: **Spall, Christopher John et al**
BARKER, BRETTELL & DUNCAN 138 Hagley
Road
Edgbaston Birmingham B16 9PW(GB)

Windshield wiper.

A wiperblade of a windshield wiper of the type including a primary yoke (1) connected to a wiper arm and at least one secondary yoke (2) connected to the primary yoke. Each of the primary and secondary yokes has a generally inverted U-shape cross section including one top wall and two side walls and, at least one side wall and the top wall of the secondary yoke are located at least partially inside the space defined by the top wall and the side walls of the primary yoke in the region wherein the yokes are overlappingly disposed during the usage of the wiper.

FIG. 2

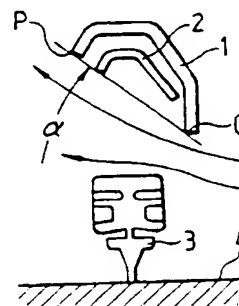
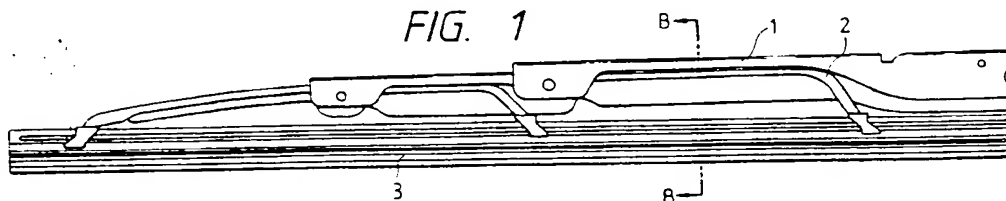


FIG. 1



WINDSHIELD WIPER

Field of the Invention

This invention relates to a windshield wiper for use in a vehicle such as an automobile and, particularly, to a windshield wiper which enables to prevent the decrease in the processing force of the wiper when the vehicle runs at a high speed.

Description of Prior Art

It has been recognized that the pressing force of the windshield wiper sometimes decreases excessively such that the wiperblade of the wiper is lifted from the surface of the windshield being wiped by the wiper through the aerodynamic force acting on the wiper, when the vehicle runs at a high speed, whereby a striped pattern may be observed on the surface of the windshield.

Various proposals have been made and utilized against such problems, and some of them include the types of blades which receive the air stream to augment the pressing force. In Japanese Patent Publication 54-12689(1979), a yoke of the wiperblade is formed a generally inverted L-shape, as compared with generally inverted U-shape of a conventional wiperblade, so that the air stream acting on the lower surface of the yoke will smoothly flow through the wiperblade and the upward force does not act on the lower surface of the yoke.

However, such a proposal is effective for preventing the force acting on a specified yoke and in the upward direction, but is not effective when the wiperblade has plurality of mutually overlapping yokes. Because the air stream flowing on the upper (remote from the surface of the windshield) surface of the lower (near to the surface of the windshield) yoke may flow against the inner surface of the upper yoke, thereby which causes the force acting on the wiperblade in the upper direction. Thus, the characteristics in a high speed condition are impeded.

The present invention has been made with respect to the circumstances aforementioned, and the object of the present invention is to provide a wiper device for preventing the decrease in the pressing force of the wiperblade on the windshield during the high speed condition of the vehicle thereby preventing the striped pattern on the windshield.

Summary of the Invention

According to the invention, there is provided a

wiperblade of a windshield wiper including a primary yoke connected to a wiper arm and at least one secondary yoke connected to the primary yoke, wherein each yoke has a generally inverted U-shape cross section including one top wall and two side walls and at least one of two side walls and one top wall of the lower yoke or the secondary yoke are located at least partially in the space defined by the top wall and the side walls of the upper yoke or the primary yoke in the region wherein the yokes are overlapped in use.

Since at least one side wall of the lower yoke is located in the space defined by the upper yoke in usage of the wiper, thus, the air stream does not lash against the inner surface of the upper yoke, and the decrease in the pressing force can effectively be prevented.

Brief Description of the Drawings

Further objects and effects of the present invention will become apparent from the following detailed description in conjunction with the drawings, in which:

Fig. 1 is a partial side view of a wiperblade according to a first embodiment of the present invention;

Fig. 2 is a sectional drawing viewed along line B-B in Fig. 1;

Fig. 3 is a sectional view similar to Fig.2 and showing a modified form;

Fig. 4 is a sectional view similar to Fig.2 and showing a further modified form;

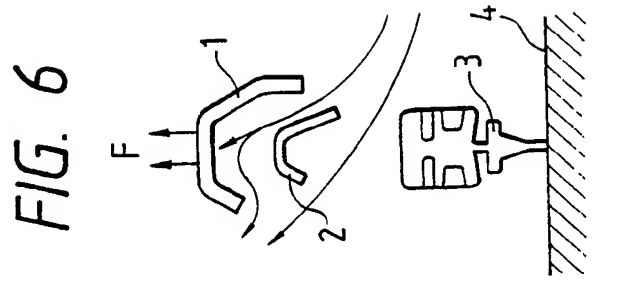
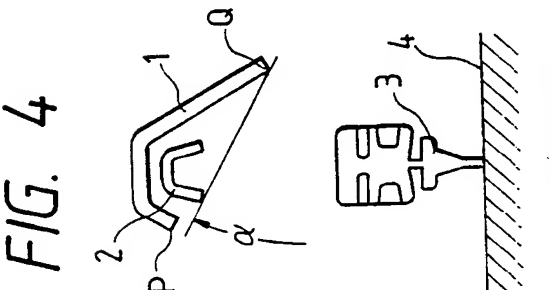
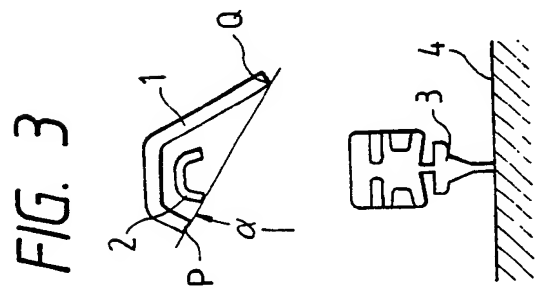
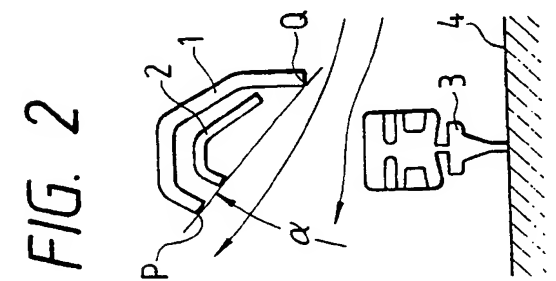
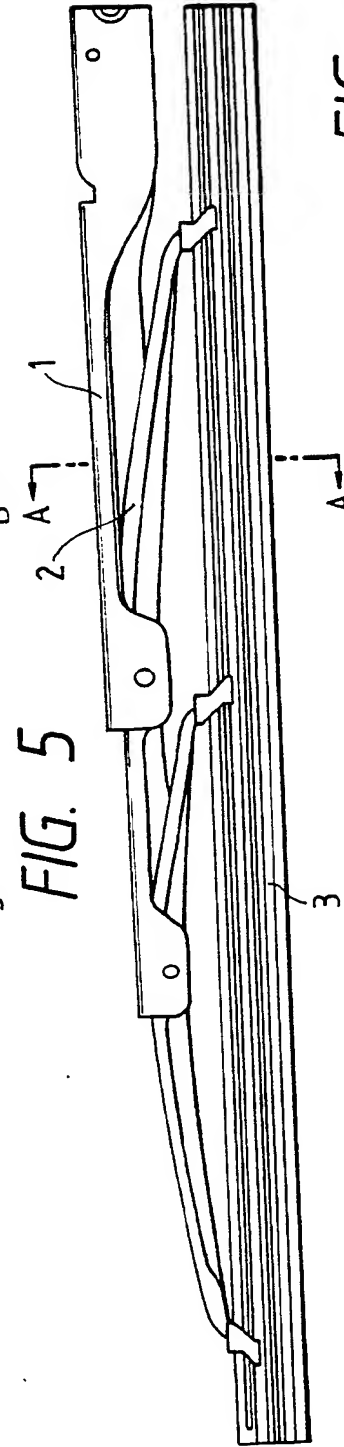
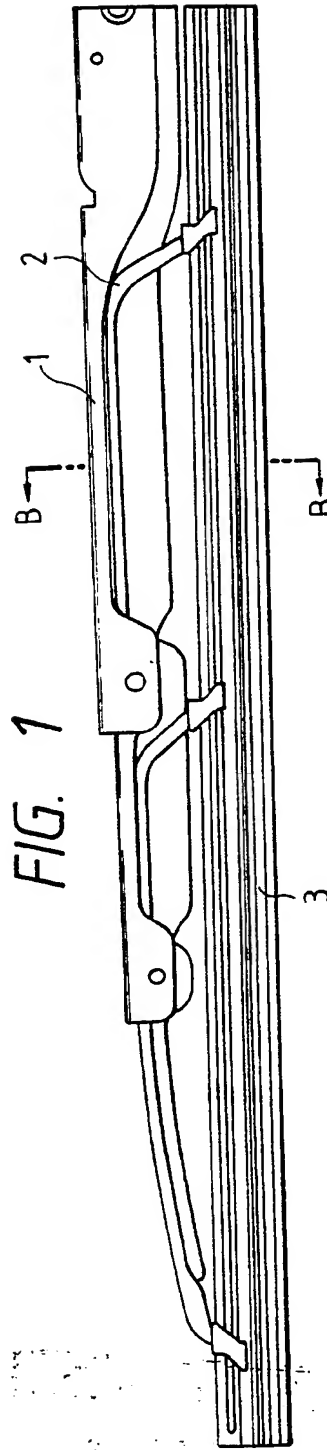
Fig. 5 is a view similar to Fig.1 and showing a prior art, and

Fig. 6 is a sectional drawing viewed along line A-A in Fig.5.

Detailed Description of Preferred Embodiments

The wiperblade shown in Figs.5 and 6 comprises an upper yoke 1 and a lower yoke 2 which are overlappingly disposed during the usage of the wiper. This is the type of the wiperblade that the upper yoke 1, the lower yoke 2 and a blade rubber 3 are generally aligned in the vertical direction or in the orthogonal direction with respect to the surface of a windshield 4.

As shown in Fig.6, during the usage of the wiper, a part of the air stream enters the region between the upper yoke 1 and the lower yoke 2, which is lashed against the inner or the lower



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71 Applicant: **Nippon Wiperblade Co., Ltd.**
998, Oaza Kamiochiai
Yono-shi Saitama-ken 338 (JP)

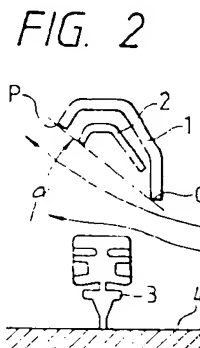
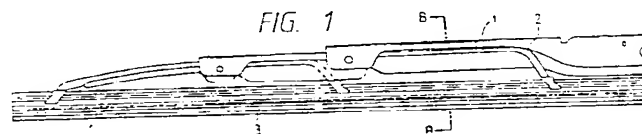
72 Inventor: **Arai, Masaru c/o Nippon Wiperblade Co.Ltd.**
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BARKER, BRETTELL & DUNCAN 138 Hagley Road
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EUROPEAN SEARCH REPORT

Application Number

EP 89 30 5089

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	DE-U-8518515 (SWF) * page 9, lines 11 - 16 * * page 10, line 3 - page 12, line 11; figures 1-5 *	1-4	B60S1/38
Y	---	5	
Y	DE-A-3637348 (SWF) * column 3, line 58 - column 4, line 3; figure 3 * -----	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B60S
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 13 OCTOBER 1989	Examiner VERLEYE J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			

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